



Site Analysis American Creosote Works, Inc. Jackson, Tennessee

EPA Region 4
and OERR



Remedial Response and
Site Analysis
American Creosote Works, Inc.
Jackson, Tennessee

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Contract No. 68-03-3161

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ERRATA

In the References section (page 20), the roll and frame numbers of the 1983 photography analyzed in this report are:

Roll 83/018	Frames 0254-6
Roll 83/025	Frames 830-2
Roll 83/057	Frames 658-60

NOTICE

This report has not been peer and administratively reviewed within EPA and is for internal Agency use and distribution only.

ABSTRACT

Tanks, numerous buildings, and dark, probably heavily stained, areas of ground are identified on the American Creosote Works site in Jackson, Tennessee from 1950 to 1983. Unlined lagoons are present onsite from 1971 to 1983. Runoff from the site enters the south fork of the Forked Deer River from 1950 to 1971. Later, revetments contain potential onsite runoff. A land use analysis was performed for the year 1979 for the area surrounding the site.

The Environmental Protection Agency's (EPA) Environmental Photographic Interpretation Center in Warrenton, Virginia, a field station of the Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, performed this study at the request of the EPA Region 4 office. This analysis covers the period between 1950 and 1983, and work was completed in May 1984.

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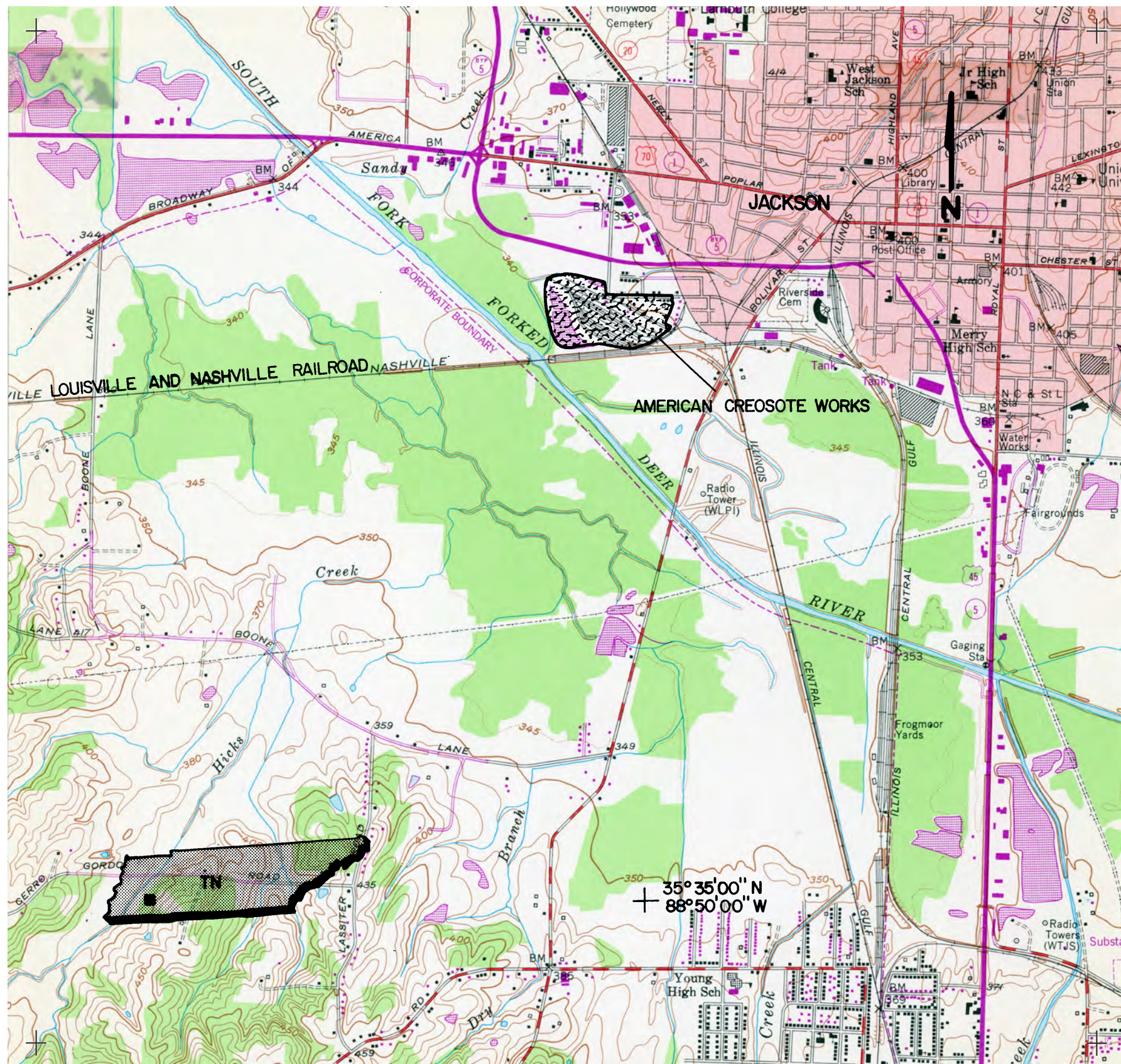


Figure 1. American Creosote Works, location map, Jackson South, TN Quad.
Approximate scale 1:24,000.

INTRODUCTION

Aerial photography of the American Creosote Works was obtained to represent the period from 1950 to 1983.¹ Historical black and white photography for the years 1950, 1956, 1960, 1965, 1971, 1974, and 1979 was used for this analysis. Current color missions were flown for EPA on June 1, June 22 and August 4, 1983. Printed enlargements of the site were not included in this report for the years 1956, 1965, and 1974 because no significant changes occurred in those years. Brief textual descriptions are provided for 1956 and 1974, however. A land use analysis was performed for the year 1979 (Figure 2), and drainage channels were annotated on the 1950 photograph (Figure 3) and on any later photograph where a change in the drainage occurs.

The Environmental Protection Agency's (EPA) Environmental Photographic Interpretation Center in Warrenton, Virginia, a field station of the Environmental Monitoring Systems Laboratory in Las Vegas, Nevada, performed this study at the request of the EPA Region 4 office. This analysis was completed in May 1984.

BACKGROUND AND GENERAL SITE DESCRIPTION

The American Creosote Works is an 18-hectare (45-acre) site located in southwest Jackson, Tennessee, two blocks west of Bolivar Street between Bypass 5 and the Louisville and Nashville Railroad (annotated "railroad" on the photo overlays). Figure 1 depicts the site location, keyed to a U.S. Geological Survey (USGS) 1:24,000 scale topographic map. Site boundaries or areas used in the analysis were determined by observations made from the aerial photography and do not denote legal property lines or ownership.

¹A complete listing of all maps and photography used for this report can be found in the References section.

The site consists of a main processing area, other smaller buildings, a large Quonset hut, wood storage areas accessed by road and rail spurs, and, from 1971 on, unlined lagoons. Also onsite from 1950 to 1983 are two buildings that look like residences. It could not be determined when or if these buildings were used as residences versus facility-related buildings.

Table 1 gives the size of each lagoon, and of the total site, in hectares and acres.

TABLE 1

Size of Site and Lagoons
(in hectares (and acres))

<u>Site</u>	<u>Lagoon 1</u>	<u>Lagoon 2</u>	<u>Lagoon 3</u>
18.1 (44.8)	(too small to measure accurately)	1.5 (3.7)	0.6 (1.4)
	<u>Lagoon 4</u>	<u>Lagoon 5</u>	<u>Lagoon 6</u>
	0.2 (0.5)	0.3 (0.7)	1.0 (2.5)

Five vertical storage tanks, three horizontal tanks, a rectangular lagoon (probably concrete-lined and revetted), one large building and two elevated pipelines are always visible at the main processing area. These individual features (except for the lagoon) are labeled only on the 1950 photography. In general, features of interest onsite are labeled only on the first year they are visible, and their prior location is noted if they are later removed.

Portions of the main processing and wood storage areas appear to have a very dark-toned appearance throughout the study period. The dark tone or color of these areas may have been caused by ground staining and/or the deposition of dark-toned materials. The darkest of these areas have been outlined on the photo overlays.

METHODOLOGY

A search of government and commercial sources was undertaken to obtain the best quality photography available of the site spanning the desired time frame. A listing of all maps and photography used for this report can be found in the References section.

The analysis was performed by stereoscopically viewing pairs of transparencies, backlit on a standard Richards light table. By observing the site three-dimensionally, and at various magnifications, the analyst could search for objects, features, or "signatures" associated with different environmental conditions. The term "signature" refers to a combination of characteristics (such as color, tone, shadow, texture and size) which indicate a specific object or condition, even though the object itself is not identifiable from the photography.

Prints were made from coverages which reveal significant changes in the study area. Findings are annotated on overlays to these prints, or to maps of the study area, and full descriptions are provided in the accompanying text. The resolution quality of the original, transparent photography used by the analyst is degraded on the prints due to factors inherent in the printing process. Therefore, some objects or features identified from the original film and described in the text may not be clearly discernible, or even visible, on the photographic prints presented in this report.

It should be noted that site boundaries or areas used in this analysis were determined by observations made from the aerial photography and do not denote legal property lines or ownership.

In this report, a distinction is made between probable and possible identifications. Probable is used when a limited number of discernible signatures allows the analyst to be reasonably sure of a particular identification. Possible is used when a few signatures are discernible, and the analyst can only infer an identification. Also, in this report, lagoon refers to liquid containment areas that are apparently used for waste storage, disposal or treatment. Catchment basin refers to areas that capture and temporarily retain storm water runoff.

LAND USE

Figure 2 depicts the various types of land uses and cover within an approximate 2-kilometer (1.2-mile) radius of the American Creosote Works site. The land use classification system used in this report was adapted from a United States Department of Interior publication¹ on land use identification using remote sensor data. Minor modifications to this system were required to provide an accurate representation of land usage in the area.

The analysis was performed from photography dated November 17, 1979. The following categories are used in this analysis:

LAND USE CATEGORIES

11	Residential	192	Recreational/Multiple Structures
12	Commercial	193	Recreational/Open Urban
13	Industrial	21	Cropland and Pasture
133W	Heavy Industrial/Wood Processing	24	Farmsteads and Farm-Related Buildings
141	Highways/Roads/Access Roads/ Freeways/Interstates	32	Shrub-Brush Rangeland
143	Railroads	4	Forestland
143Y	Railyards, Repair Facilities	51	Waterways, Streams and Canals
151	Water Treatment	533	Lagoons/Basins
153	Power Substations	76	Transitional
154	Power Lines		
16	Mixed Urban or Built-Up Land		
171	Cemeteries		
173	Vacant Urban		
177	Dumps		
178	Unidentifiable Urban or Built-Up		
179	Other Urban or Built-Up		
185	Educational Facility		
188	Road Repair/Maintenance Yard		

¹U.S. Department of Interior, 1976, A Land Use and Land Cover Classification System for Use with Remote Sensor Data, Geological Survey Professional Paper 964.

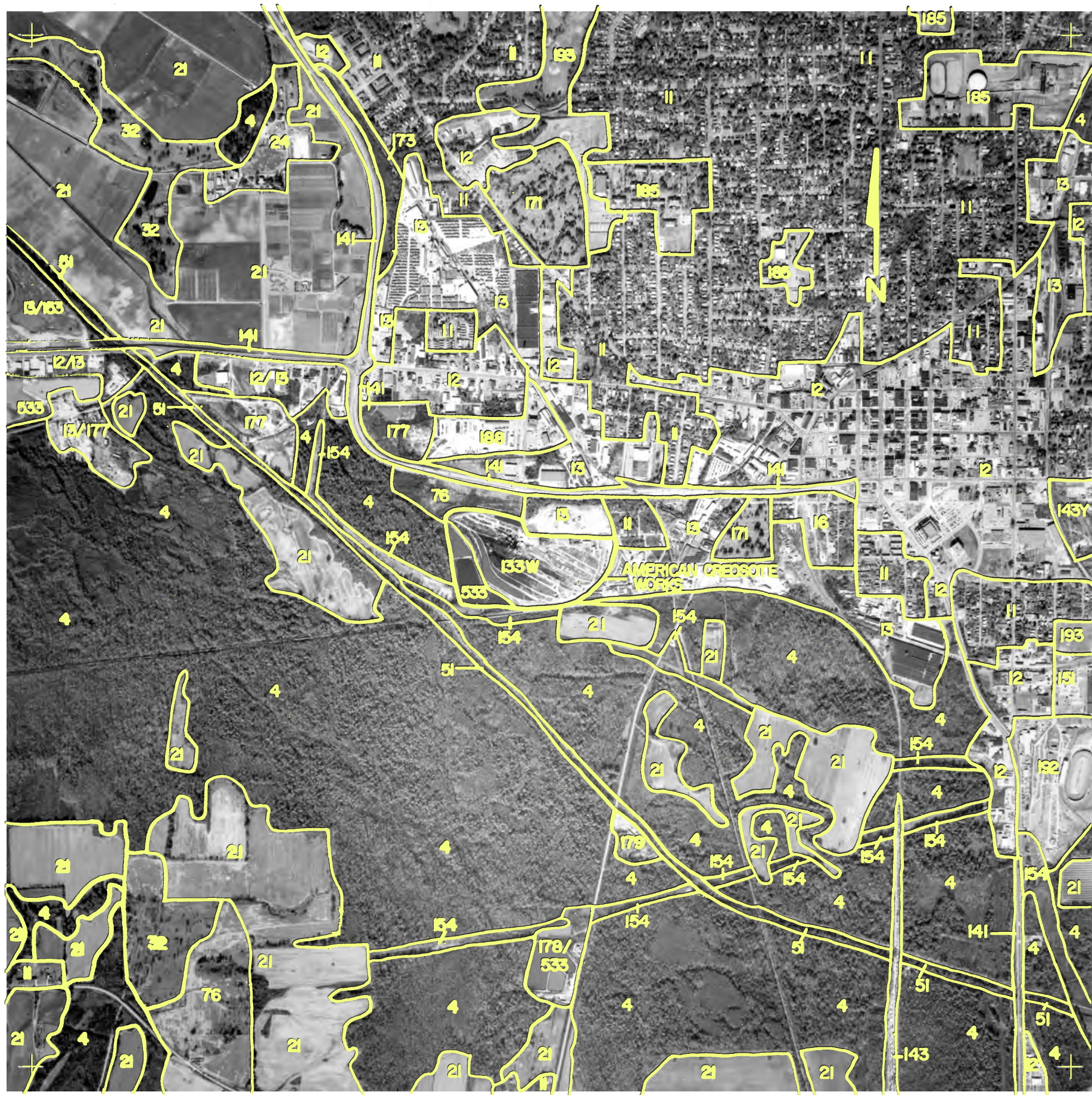


Figure 2. American Creosote Works, land use, November 17, 1979.
Approximate scale 1:17,700.

DECEMBER 18, 1950 (Figure 3)

Two plumes of smoke are rising from the large building at the main processing area. A nearby rectangular, apparently concrete-walled, lagoon (L1) contains light-toned liquid. The soil in most of the wood storage areas appears darker in tone than the natural soil in the general area. On the west side of the site trees have been cleared from the area (CL) between the storage piles and a large drainage channel. Mounded material (MM) (possibly sawdust) and a light-toned ground scar (GS) are visible along the southwest edge of the wood storage area.

LEGEND

CL - CLEARED AREA
DK - DARK-TONED
GS - GROUND SCAR
L - LAGOON
LT - LIGHT-TONED
M - MATERIAL
MM - MOUNDED MATERIAL
SL - STANDING LIQUID

— . —→ - DRAINAGE
— ... —→ - SUSPECTED DRAINAGE
—|—|—| - PIPELINE
— — — - SITE BOUNDARY
- - - - - HISTORICAL BOUNDARY
— — — — — - DARKEST AREAS OF GROUND

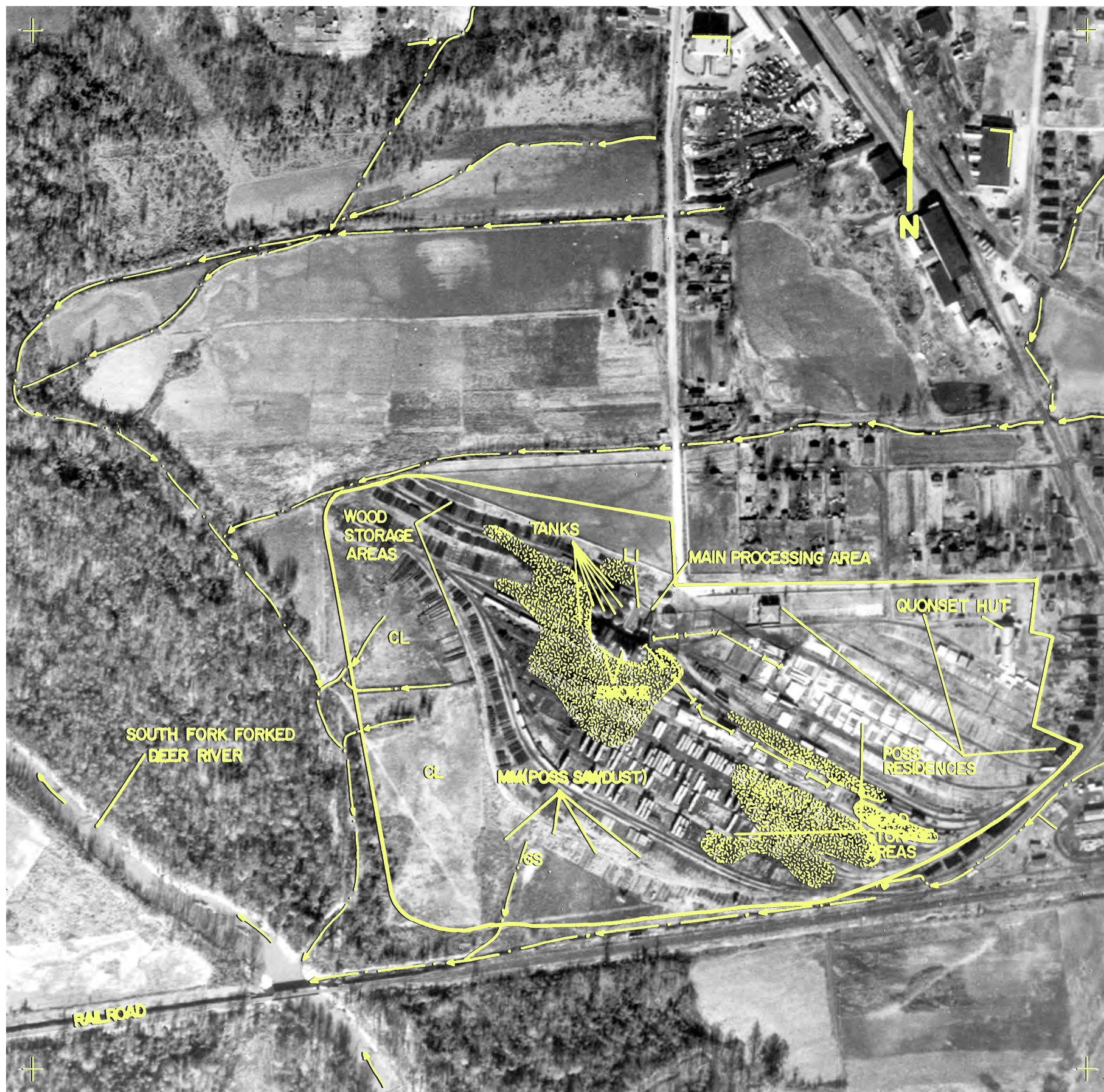


Figure 3. American Creosote Works, December 18, 1950.
Approximate scale 1:3,900.

SEPTEMBER 25, 1956 (No Photo Included)

Features of interest are annotated on Figure 4.

Between 1950 and 1956 the site was cleared and neatened to some degree. The general tone of the ground became lighter and the piles of wood were stacked more regularly. The wood storage area expanded along the south and southwest portions of the storage areas visible in 1950, including the area where the possible sawdust was visible.

SEPTEMBER 14, 1960 (Figure 4)

Little change has occurred onsite since 1956. Probable scattered refuse is visible in the northwest corner of the site, and an area of disturbed ground and small objects, possibly refuse, are present in the southern portion of the site. Light- and dark-toned liquid is visible in L1.

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— ... —→ - SUSPECTED DRAINAGE
— | — | — | - PIPELINE
— — — - SITE BOUNDARY
- - - - - HISTORICAL BOUNDARY
••••• - DARKEST AREAS OF GROUND

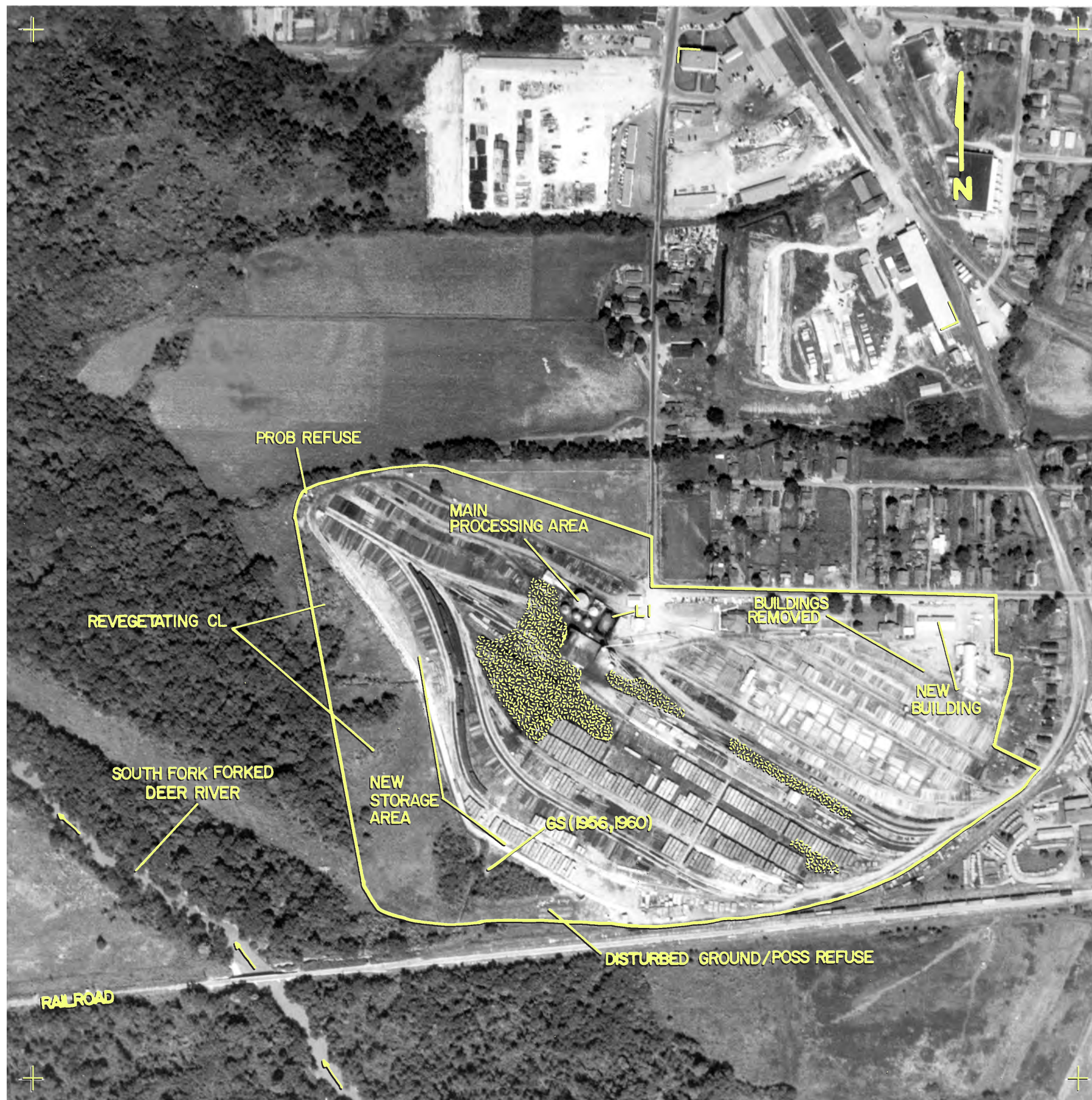








Figure 4. American Creosote Works, September 14, 1960.
Approximate scale 1:3,900.

NOVEMBER 8, 1971 (Figure 5)

A large revetted lagoon (L2) is under construction in the southwest corner of the site. An area of graded fill that may have been receiving spoils from the lagoon is present northwest of the site. Light-toned material (LT M) and refuse are visible on the north edge of the site. Two large piles of probable refuse are present adjacent to the newly constructed Bypass 5 on either side of the site access road. L1 contains dark liquid. A small pool of probable standing liquid (SL) is present in a dark-toned area east of L2.

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 - DRAINAGE
 - SUSPECTED DRAINAGE
 - PIPELINE
 - SITE BOUNDARY
 - HISTORICAL BOUNDARY
 - DARKEST AREAS OF GROUND

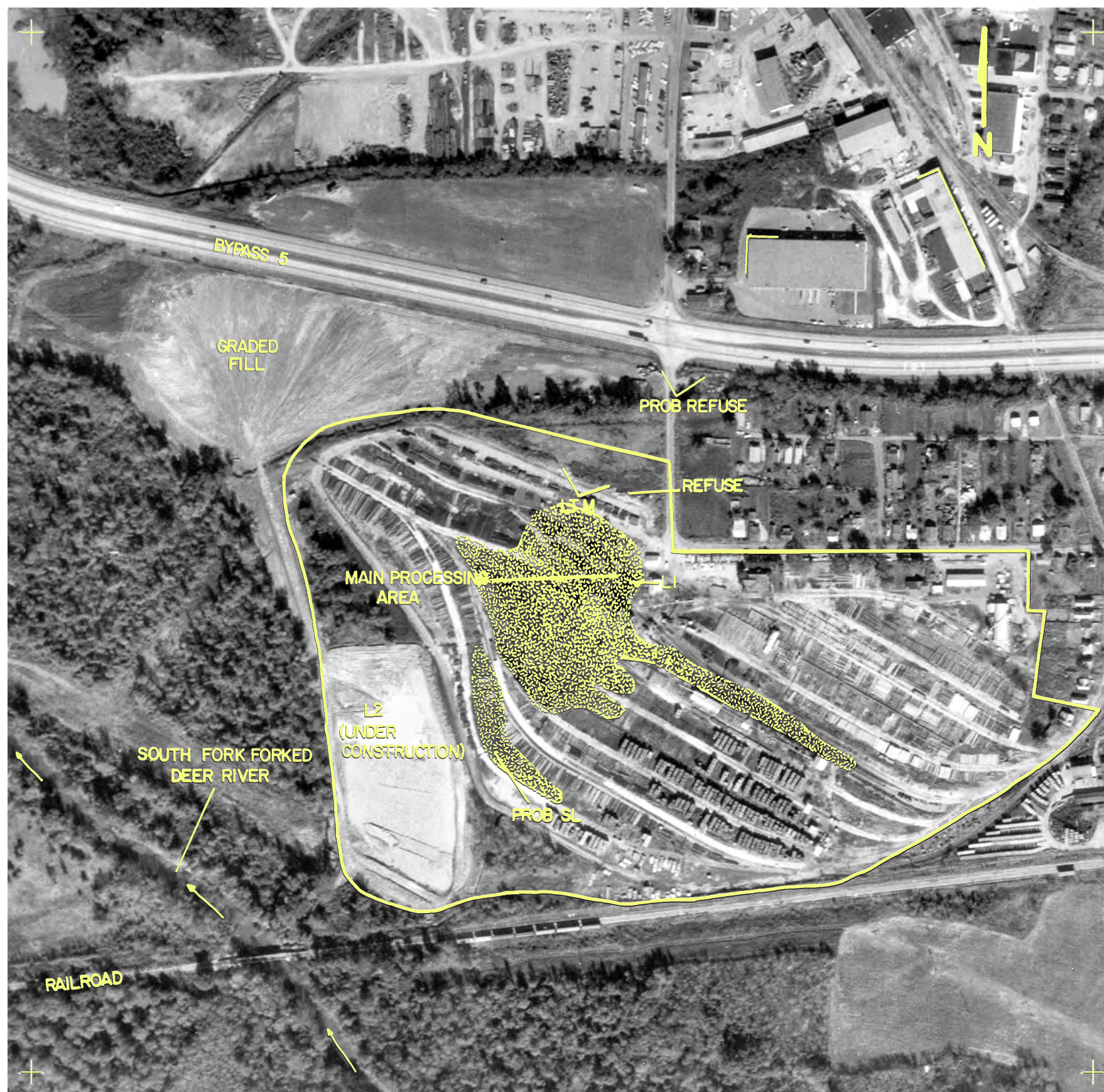


Figure 5. American Creosote Works, November 8, 1971.
Approximate scale 1:3,900.

DECEMBER 3, 1974 (No Photo Included)

Features of interest are annotated on Figure 6.

Three additional lagoons (L3-L5) were constructed onsite between 1971 and 1974. All the lagoons contained liquid of various tones in 1974. Runoff from the western portion of the site was channeled into L2. A revetted catchment basin was constructed just outside the southwest corner of the site. Earthen revetments were built along the perimeter of the western half of the site. Additional fill was added to the fill area north of the site. The courses of some of the drainage channels around the site were altered slightly between 1971 and 1974; however, the runoff from the area still eventually entered the South Fork of the Forked Deer River. The inventory of stacked wood onsite decreased dramatically between 1971 and 1974. The large piles of refuse south of Bypass 5 were no longer present in 1974.

NOVEMBER 17, 1979 (Figure 6)

The site is partially flooded in 1979. The area labeled L6 may be simply an inundated low area rather than a formal lagoon. Large pools of light- and dark-toned (DK) standing liquid are present between L6 and the main processing area. The liquid in the various lagoons varies in tone. Light-toned areas, which might indicate an oily sheen on the liquid, are annotated. Six new open, square, liquid-filled tanks are present at the main processing area. The inventory of wood onsite has been further reduced since 1974. The fill area northwest of the site has begun to revegetate. A small amount of possible refuse is visible north of the site along Bypass 5.

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— . — → - DRAINAGE
— ... — → - SUSPECTED DRAINAGE
— | — | — | - PIPELINE
— — — — - SITE BOUNDARY
- - - - - HISTORICAL BOUNDARY
— [stippled] — - DARKEST AREAS OF GROUND

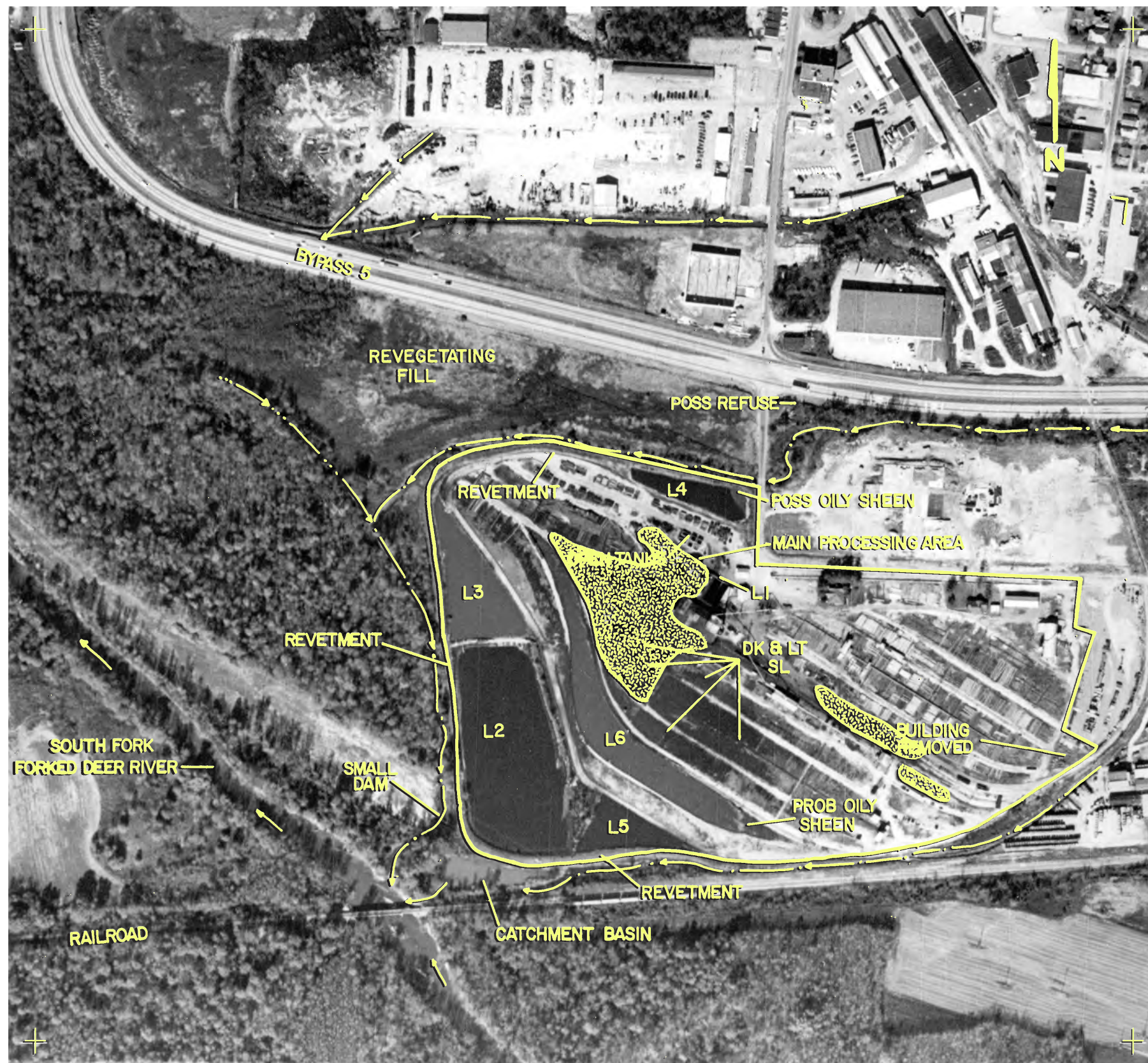


Figure 6. American Creosote Works, November 17, 1979.
Approximate scale 1:4,500.

JUNE 1, 1983 (Figure 7)

The western portion of the site has been flooded and the site appears abandoned. An oily sheen is visible on the surface of the water in many places. Areas of reddish liquid are visible along the east edge of the flooded area. L1 contains light- and dark-toned reddish liquid. No stacks of wood remain onsite. Refuse is visible between the north edge of the site and Bypass 5.

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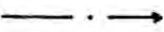
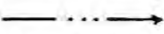
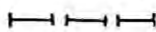



 - DRAINAGE
 - SUSPECTED DRAINAGE
 - PIPELINE
 - SITE BOUNDARY
 - HISTORICAL BOUNDARY
 - DARKEST AREAS OF GROUND



Figure 7. American Creosote Works, June 1, 1983.
Approximate scale 1:3,500.

June 22, 1983 (Figure 8)

Remedial clean-up action has begun onsite, and the site is no longer flooded. Shallow pools of liquid are visible in L2, L3 and L5. L4 contains enough liquid to completely cover the bottom of the lagoon. An oily sheen is visible on the surface of the liquid in L2 and L4. Breaches have been cut in the revetments between L2 and L3, and between L2 and L5. L6 contains no liquid; however, the entire area appears very muddy, oily and stained. Two small pools of standing liquid are visible at the main processing area.

A small cluster of drums and four pieces of heavy equipment are visible in the southeast portion of the site.

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Figure 8. American Creosote Works, June 22, 1983.
Approximate scale 1:2,800.

AUGUST 4, 1983 (Figure 9)

A large amount of fill and cover material (not annotated) has been deposited on the western portion of the site since June 22. Graded earth now covers nearly all of the dark-toned areas previously located in and around the main processing area and the former wood storage areas. A patch of ground where white material has been graded into the soil surface is visible northeast of L5, and a small pile of white material appears to have been deposited on top of a stained area east of L5. A large amount of white material has been deposited in L2 and a smaller amount at the east end of L4. The two trucks and the bulldozer near L4 may be involved in depositing the white material. A white cloud visible over this area may be a result of the dumping of the material. The white cloud visible in the southern portion of the photograph was visible on an earlier frame of photography (not shown), originating at the point where heavy equipment is spreading the white material in L2.

The revetment between L2 and L5 has been removed, and both lagoons have been drained and graded. A pool of brownish standing liquid is visible in L5. The bottom of L3 is covered with a mottled brown and green liquid that has an oily sheen on its surface. The east end of L4 has been revetted off from the rest of the dry lagoon and contains dark liquid. L1 has been removed, leaving a shallow earthen hole.

Three large open tanks and a number of smaller tanks (annotated as New Tanks) have been placed along the north edge of the site. Hoses and small pipelines are visible around these tanks, including one large light-colored hose that runs north from the tank offsite and then west, possibly terminating in the creek.

A dark area, east of the main processing area, along a railroad spur (not annotated) has consistently been one of the darkest areas onsite. This area appears heavily stained and has not been covered or graded. Most of the other dark areas appear to have been stained after June 22, 1983. The dark area northeast of former L6 may be a stain caused by material that was dumped on the surface or that migrated up from under the surface.

Southeast of the main processing area are some smaller buildings and old wood storage areas (not annotated). This area has begun to revegetate with grass and shrubs. The soil in this area generally appears to be a dark grey in color, and no signs of earthmoving, filling or covering are visible.

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 - DRAINAGE
 - SUSPECTED DRAINAGE
 - PIPELINE
 - SITE BOUNDARY
 - HISTORICAL BOUNDARY
 - DARKEST AREAS OF GROUND



Figure 9. American Creosote Works, August 4, 1983.
Approximate scale 1:2,500.

REFERENCES

AERIAL PHOTOGRAPHY

<u>Date</u>	<u>Agency</u>	<u>Mission Code</u>	<u>Frame #</u>	<u>Orig. Scale</u>	<u>EPIC Frame</u>
December 18, 1950	ASCS ¹	ANG	3F:127,128	1:20,000	6017:046, 047
September 25, 1956*	ASCS	ANG	4R:141,142	1:20,000	6017:044, 045
September 14, 1960	ASCS	ANG	3AA:149,150	1:20,000	6017:042, 043
May 12, 1965*	ASCS	ANG	1FF:51-53, 83-85	1:20,000	6212-6217
November 8, 1971	ASCS	--	272:99-101,109	1:20,000	6017:035- 038
December 3, 1974*	SCS ²	47113	174:48,49	1:48,000	6017:033, 034
November 17, 1979	ASCS		178:61,62	1:40,000	6017:031, 032
June 1, 1983	EPIC ³	83/018	--	1:6,400	--
June 22, 1983	EPIC	83/025	--	1:3,500	--
August 4, 1983	EPIC	83/057	--	1:3,600	--

*Not reproduced for inclusion in this report.

MAP

<u>Source</u>	<u>Name</u>	<u>Scale</u>	<u>Date</u>
USGS ⁴	Jackson South, TN	1:24,000	1950, photorevised 1979

¹Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture

²Soil Conservation Service, U.S. Department of Agriculture

³Environmental Photographic Interpretation Center, U.S. Environmental Protection Agency

⁴U.S. Geological Survey, U.S. Department of Interior